

# CDMP

## Climate Database Modernization Program ANNUAL REPORT 2003

National Oceanic and Atmospheric Administration  
National Environmental Satellite, Data, and Information Service  
National Climatic Data Center  
Asheville, North Carolina

## PROGRAM GOALS

The National Oceanic and Atmospheric Administration's (NOAA) Climate Database Modernization Program (CDMP) has a relatively simple goal: to make major climate databases available via the World Wide Web.

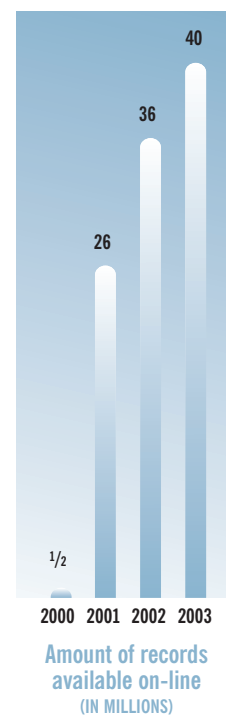


The program is managed by the National Climatic

Data Center (NCDC) located in Asheville, NC, an agency of NOAA's National Environmental Satellite, Data, and Information Service.

This marks the fourth year of existence of the Climate Database Modernization Program. As the CDMP matures, the program continues to grow and expand, and now includes tasks involving five NOAA line offices: Regional Climate Centers, State Climatologists, Foreign Meteorological Services, the U.S. Air Force and an International Organization. The number of images available on-line exceeded 40 million records in 2003, totaling over 5 terabytes of data. Modernization continued to involve the keying of observations; the imaging of original records on paper, microform, or photographs; the vectorizing of shorelines; and the digitizing of analog recordings.

The program continues its international connection, with data modernization efforts underway in Africa and Central America. CDMP has also helped arrange agreements to image or key marine databases with Canada, Germany, China and the World Meteorological Organization's Library.

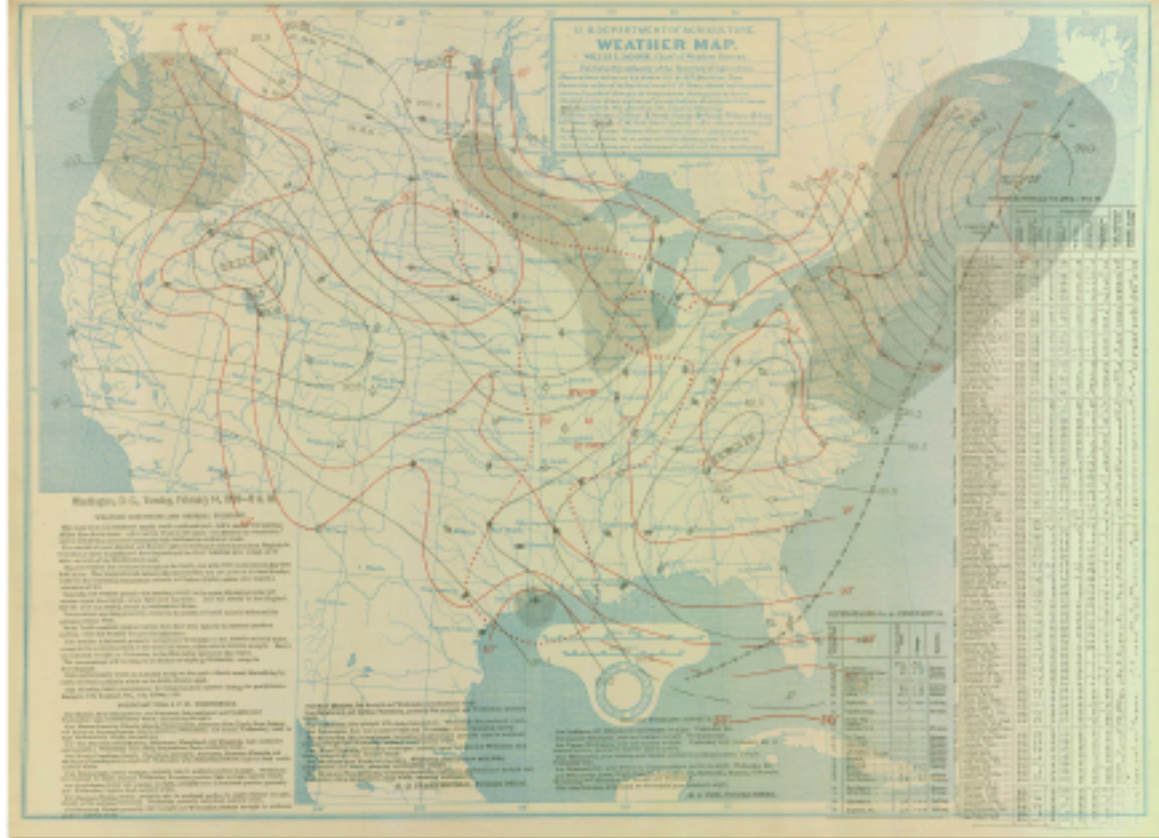


## NOAA'S RICH HERITAGE OF CLIMATE AND ENVIRONMENTAL DATA

The National Oceanic and Atmospheric Administration holds a vast amount of varied and unique climate and environmental data. Much of these data remain on paper or microform and are difficult to access. CDMP continues to fund NOAA projects that enable these data to become easily accessible via the Internet.

The scope and variety of these data recovery projects range from keying ionospheric data to build climatologies of the near-earth space environment, to digitizing Mechanical Bathythermograph Data measurements of water temperatures at various ocean depths. The ionospheric records represent the best long-term measurements of the critical regions that are important to the operation of radio communications, surveillance radars, satellite to ground telecommunications, and data-driven space environmental models. Meanwhile, the bathythermograph data will help fill in important gaps in the sea temperature database.

At the coastline, CDMP continues to support a multi-year U.S. shoreline vectorization project which contributes to the modernization and access of a climate database — the only high-

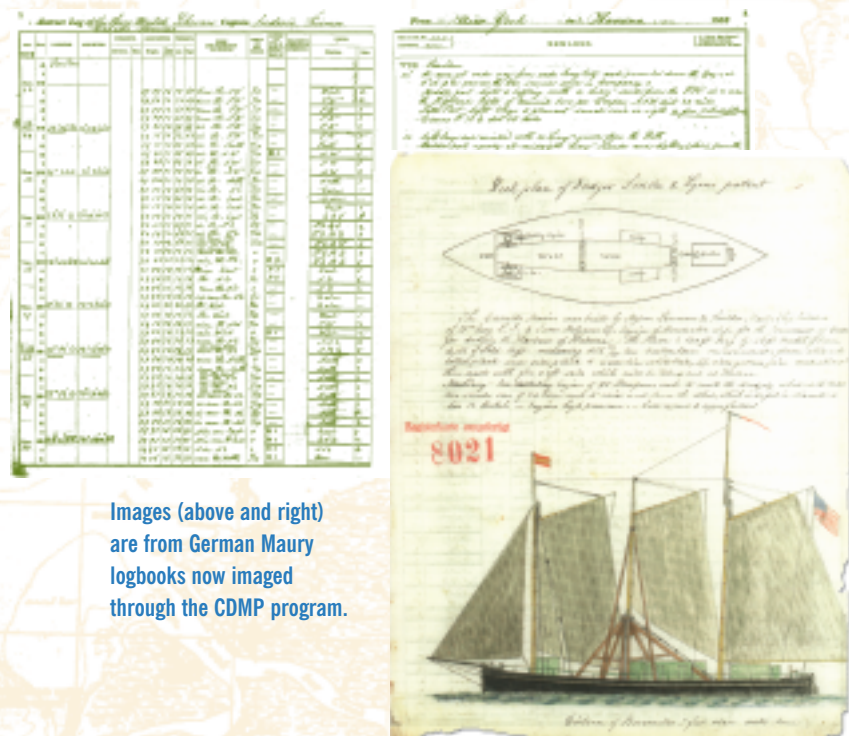


Above is the image of the February 14, 1899 “Cold Wave” weather map. A quote from the *Monthly Weather Review* of February 1899: “These cold waves established many new landmarks for future reference, most striking... perhaps was the flow of ice down the Mississippi River on the 17th, past New Orleans and into the Gulf of Mexico, an event never before witnessed within the memory of man. The loss of human life, from January 29th to February 13th... was 105 persons”. This month actually featured two different cold waves, both of which set some all-time state records which exist to this day (-39° F at Milligan, Ohio).

resolution, tidally controlled shoreline database in existence. Through the efforts of the CDMP program, the NOAA library brought the *Daily Weather Map* series and the *Monthly Weather Review* to the web through the imaging of these valuable historical documents. These digital images of actual weather maps, dating from the 1870’s up to the current year, are now only a mouse click away on the Internet.

NOAA’s CDMP partner contractors worked on these and various other NOAA projects, bringing the total to over 40 during 2003. With this many projects ongoing in a given year, the contractors must remain focused and flexible to meet each project’s requirements on schedule and within budget.

NOAA’s three data centers (National Oceanographic Data Center, National Geophysical Data Center and National Climatic Data Center) have dozens of tasks underway. These range from imaging historical photographs of thousands of glaciers, to keying historical pre-1949 cooperative daily weather observations.



Images (above and right) are from German Maury logbooks now imaged through the CDMP program.

## UPPER AIR DATA FOR IRAQ

The Iraqi Upper Air Collection data from the late 1950's thru the mid 1980's are on loan to CDMP through the Air Force Combat Climatology Command (AFCCC). These data were provided to AFCCC so they could be preserved before deteriorating beyond the point of readability. Approximately 22,500 records will be imaged through CDMP for the Air Force, which then plans to return the original records to the Iraqi Meteorological Service. The records are one-of-a-kind, and special precautions are being taken to guard their safety and insure they are returned in the same or better condition than received. Once scanned, the data will be available on the Web Search Store Retrieve Display (WSSRD®) on-line image database system, and be accessible to researchers. The second phase of the project will be to key various upper air historical observations in the collection that are not already included in the historical CARDS (NCDC upper air) database.



Arabic upper air ascent ledger. The document opens back to front and reads from right to left. Below, Iraqi upper air records for Bagdad, total of 22,485 imaged records.



## FORTS DATA PROJECT

Meteorological Records from 1700's through the 1800's

As part of the CDMP, early Colonial meteorological records and journals from the 1700's, along with U.S. Signal Service and Army records from the 1800's, have been scanned and indexed, and will be made available online to the research community. In the mid- to late-1800s, other voluntary observers were managed by the Smithsonian Institution and the U.S. Department of Agriculture. Weather observations at these stations typically included precipitation and temperature, recorded three times a day, especially for the earlier periods, and later, daily maximum and minimum temperature. At some



Eight feet West of Apple building, exposed to all winds except at due E. winds, no other building near, former low ground under shelter is

stations, observations were also taken of cloud cover, wind direction and movement, barometric pressure, and dry-and wet-bulb temperatures, from which relative humidity

was calculated. These station networks eventually evolved into the Weather Bureau's Cooperative Observer Network.

Many of these daily records are also being keyed as part of this project. Approximately 160 stations (about three per state) have been selected for keying, with more stations to be keyed as funding permits. Over 30 distinct data elements have been identified for keying. Significant changes in instrumentation and observation practices occurred during the period covered by this data set. A comprehensive set of metadata will be developed to complement the data set.

CDMP is receiving station history and metadata support from several Regional Climate Centers and State Climatologists.

After quality assurance methods are applied to the data set, it will be added to NCDC's digital database. This will extend the record of daily climate variables back into the early 1800's, and provide a link between more recent instrument records and paleoclimate records. Additional data sources are being researched and reviewed and added to this database periodically.





## PARTNERS AND PEOPLE

The Climate Database Modernization Program could not exist without the extraordinary efforts of people within NOAA and the people in the private sector that do the keying, imaging, and database development. Significant support is also being provided from the Regional Climate Centers, State Climatologists, and the international community. The three prime contractors for CDMP include Information Manufacturing Corporation, Rocket Center, West Virginia; Image Entry, Inc., London, Kentucky; and Lason Systems, Inc., Beltsville, Maryland. Great support is also provided by the NCDC on-site contractor, STG Corporation, whose staff prepares many of the data for shipment and performs extensive quality control on the returning data products.

The DVD included as part of this CDMP Annual Report contains interviews with four individual researchers, expressing the value of the CDMP products to their specific projects. These projects range from hurricane research to the Normandy invasion of World War II.

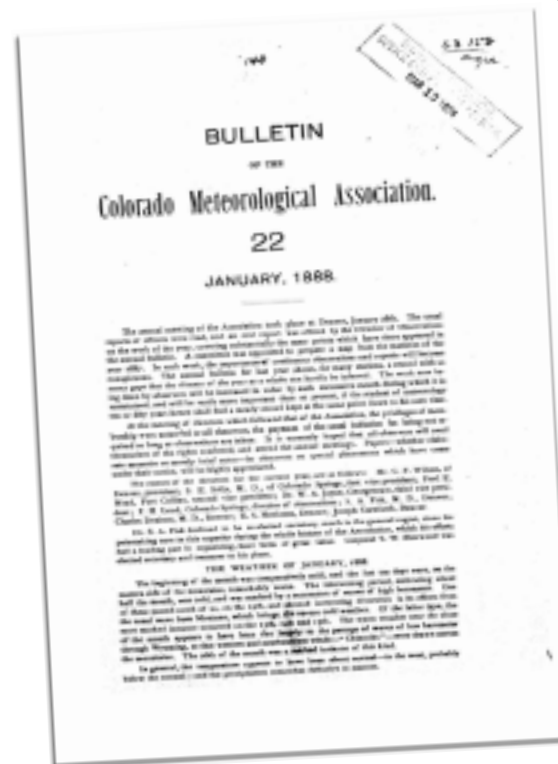
Processing archived analog Defense Meteorological Satellite Program film to digital scanned files.



## PROGRAM MILESTONES: 2003

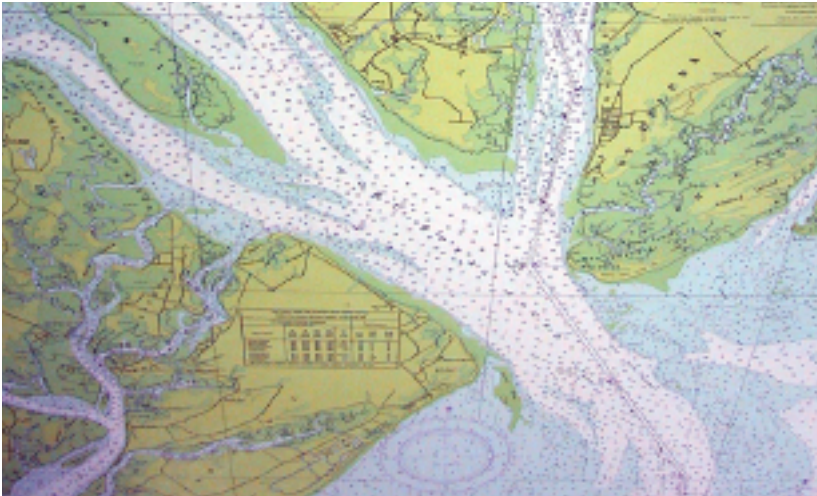
In 2003, through the efforts of the CDMP contractors, NCDC has placed on-line a new system to provide transparent public access to recent and historical serial publications for both

paying customers (through the On-line Store) and for free access users. The first publication offered through this system is the Climatological Data (CD) publication, available by state. Previously, on-line subscribers were able to access this publication back to October 1997. Now, through CDMP, all of the CD publications for the entire publication history (back to the 1890's) have been scanned and are available on-line. By early 2004, each of the remaining serial publications (Hourly Precipitation Data, Storm Data, Monthly



Climatological data publication for Colorado 1888.

Climatic Data for the World, Local Climatological Data) will be added to this system. This will provide one easy access point for all of NCDC's serial publications. The system URL is: <http://www7.ncdc.noaa.gov/SerialPublications/> In December 2003, the CDMP held its third annual Data Access Workshop as a forum for information and experience exchange between the various NOAA task leaders. The workshop, held at the NOAA Coastal Services Center in Charleston, South Carolina, also allowed for the presentation of new and continuing proposals by NOAA agencies for the upcoming year's program.



IN CONCLUSION

The number of records on-line via the CDMP WSSRD® system has grown from just one-half million in 2000 to over forty-two million at the end of 2003. These records are available to researchers for use in various climatological and environmental studies. CDMP currently has over 40 separate tasks underway, and NOAA’s effort to provide access to its vast archive of climate and environmental data continues. The CDMP program is an example of a successful government project working hand-in-hand with the private sector to recover valuable climate and environmental data and create jobs in various sectors of the economy.

NOAA/National Ocean Service hydrographic chart.

WEB ADDRESSES FOR NOAA ORGANIZATIONS:

National Oceanic & Atmospheric Administration (NOAA):  
[www.noaa.gov](http://www.noaa.gov)

National Environmental Satellite, Data, and Information Service (NESDIS):  
[www.nesdis.noaa.gov](http://www.nesdis.noaa.gov)

National Climatic Data Center (NCDC):  
[www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

National Geophysical Data Center (NGDC):  
[www.ngdc.noaa.gov](http://www.ngdc.noaa.gov)

National Oceanographic Data Center (NODC):  
[www.nodc.noaa.gov](http://www.nodc.noaa.gov)

National Ocean Service (NOS):  
[www.nos.noaa.gov](http://www.nos.noaa.gov)

National Marine Fisheries Service (NMFS):  
[www.nmfs.noaa.gov](http://www.nmfs.noaa.gov)

PRODUCT SPECIFIC URLS:

Defense Meteorological Satellite Program (DMSP):  
[dmsp.ngdc.noaa.gov/dmsp.html](http://dmsp.ngdc.noaa.gov/dmsp.html)

Coastal Services Center Shoreline Mapping:  
[www.csc.noaa.gov/shoreline/index.html](http://www.csc.noaa.gov/shoreline/index.html)

NOS Mapfinder:  
[oceanservice.noaa.gov/mapfinder/](http://oceanservice.noaa.gov/mapfinder/)

NOAA Central Library, Climate Data Imaging Project:  
[docs.lib.noaa.gov/rescue/data\\_rescue\\_home.html](http://docs.lib.noaa.gov/rescue/data_rescue_home.html)

U.S. Daily Weather Maps:  
[docs.lib.noaa.gov/rescue/dwm/data\\_rescue\\_daily\\_weather\\_maps.html](http://docs.lib.noaa.gov/rescue/dwm/data_rescue_daily_weather_maps.html)

FY 03 TASKS BY NOAA ORGANIZATION

